

INFN commitments for JUNO Update



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JUNO Europe+Americas Meeting

Ferrara, October 24 - 2022

Steady composition, 8 groups, more or less
stable number of people

Eight INFN sections

Catania

Ferrara

Frascati

Milano

Milano Bicocca

Padova

Perugia

Roma3

Areas of activity within JUNO

Computing, TAO SiPM mass testing, PMT testing

Geoneutrino , scintillator purification

Electronics for the top tracker

Scintillator optical properties and purification, computing

Reactor studies, low background techniques for assay
of construction materials and LS

Electronics, CD-GCU and global tests

Scintillator optical properties and lab. scale purific. tests

Trigger, TAO SiPM and electronics

**Globally
about 70 people
Including the technical staff**

Transversal interest : Physics&software in the
context of the established inter-European
group , integrated in the Collaboration effort

Summary of key aspects of the contribution to JUNO from INFN I

- **Liquid Scintillator:** Purification and optical measurements
 - Distillation & Stripping units - @ JUNO site
 - Plurality of Laboratory measurements
- **Top Muon Tracker** (plastic scintillators)
 - Design and realization of the Read-out boards for the multi-anode PMT's - production ongoing – concentrator boards - procedure for procurement started
- **Electronics of the Central detector**
 - Global Control Unit Board & Trigger board – production completed
 - Global testing – ongoing
 - On site installation start up - imminent
- **Background budget and control** (Talk of Monica)
 - Radioassay of materials with a plurality of techniques, NAA of LS for 10^{-15} g/g sensitivity
 - Cooperation to the on-site cleanliness conditions control and monitoring

Summary of key aspects of the contribution to JUNO from INFN II

- Geoneutrinos

Geological studies of the site and signal prediction

- Reactor studies

- Computing

Integration of the European centers in a distributed computing infrastructure interfaced with IHEP – Strong involvement of CNAF (INFN central computer center) **MoU recently signed by INFN President and Yifang**

- **TAO SiPM** readout : selection of **SiPM** – done (Hamamatsu), design and production of the readout electronics – **procurement procedure in progress**, system for mass testing – **procurement and installation in progress**

- Physics & Software

Broad involvement in many area of the JUNO physics – established a **national internal organization** well integrated in the general Collaboration effort

Activity and logistic @JUNO site

Paolo and Michele re-opened the travels to China in the spring and performed the first part of the installation of the stripping and distillation units with the help of a Chinese Company

Plans for the rest of 2022

Alberto will go and participate to the CD & OSIRIS electronics installation and test
Departing date October 28

Paolo and Cecilia will leave on November 9 to carry out the second part of the plant installation mainly electrical connection and DCS with remote help from Michele

Now the quarantine is 7+3 days

Afterwards plans for next year will be defined



Status of Funding

Essentially completed the funding of the capital investments including the most recent TAO commitment – possible **extra servers** for the electronics in the next year budget depending upon the choice of the data transfer protocol either **TCP/IP or IPbus**

Funding for computing steadily increasing for increased resources following the previsions of the **MoU**

Received INFN funding for 2022 and 2023 **common funds**

Travel money budget mostly devoted to **long stays** at the experimental site - Collaboration meeting in China not affordable with a 7+3 quarantine

Perspectives

Completion over the next year of the construction commitments for JUNO, with participation to the testing on site for the electronics - CD now and Top Tracker later

Plants commissioning to be done by the middle of next year and later on participation to the filling - How? How many persons ?
Plan to be defined

TAO: moving forward for SiPMs procurement, their testing and related electronics

The effort for a significant activity in physics&software is ramping up

The struggle to cope with the pandemic and minimize the delays not bad so far and possibilities to participate to on site work increasing